

REMARKS

INTRODUCTION:

In accordance with the foregoing, claim 6 has been amended and claim 44 has been added. Claim 44 is deemed patentable due at least to its depending from claim 6.

No new matter is being presented, and approval and entry are respectfully requested.

Claims 1-31 and 42-44 are pending and under consideration. Reconsideration is requested.

OBJECTION TO THE CLAIMS:

On page 3 of the Office Action, the Examiner objects to claims 3, 4, 15, and 16 under 37 CFR 1.75(c) as being in improper dependent form. Specifically, the Examiner asserts that the range of "at least 80%" as recited in claims 3 and 15 does not further limit claim 1, which recites a range of at or between 60% and 90%.

As also noted in the Response, the sub-range of claim 3 further defines the range of claim 1 by not including the range of 60% to 80% by reciting a porosity that is "at least 80% porosity of an overall volume of said current collector", and is therefore a narrower porosity range than claim 1 consistent with 37 CFR 1.75(c). As such, it is respectfully requested that the Examiner reconsider and withdraw the objection to claim 3.

For at least similar reasons it is respectfully requested that the Examiner reconsider and withdraw the objection to claims 4, 15 and 16.

REJECTION UNDER 35 U.S.C. §112:

In the Office Action at pages 3-4, the Examiner rejects claims 1-24 under 35 U.S.C. §112, first paragraph, as not being described in the specification since the Examiner asserts that the range of at or between 60% and 90% as recited in claims 1 and 13 is not contained in the original disclosure, as filed. This rejection is respectfully traversed and reconsideration is requested.

In the Advisory Action, the Examiner asserts that claims 3, 4, 15, and 16 as filed do not exclude 90% such that the specification does not address what is not the applicants' invention. By way of review, as set forth in claim 3 as originally presented, recites "the pores of said current collector comprise at least 60% porosity of an overall volume of said current collector" such that a range of porosity of at least 60% porosity was originally presented. Further, claim 4 as originally presented recites that "the pores of said current collector comprise at least 80 to 90% porosity of an overall volume of said current collector" such that a range of porosity that is "to 90%" was also originally presented." As such, while other aspects of the invention, such as

claim 25, may not exclude the possibility of a range including porosities of greater than 90%, other aspects of the invention include ranges greater than 60% and to 90%. It is therefore respectfully submitted that, especially in light of paragraph 0015 of the instant application, claims 1-24 are supported by the original written description and are otherwise in compliance with 35 U.S.C. §112.

REJECTION UNDER 35 U.S.C. §103:

1. Rejection of claims 1-24 in view of Chu et al. and Peled et al.

In the Office Action at pages 4-8, the Examiner rejects claims 1-24 under 35 U.S.C. §103 in view of Chu et al. (U.S. Patent No. 6,030,720) and Peled et al. (U.S. Patent No. 4,410,609). The rejection is respectfully traversed and reconsideration is requested.

In the Advisory Action, the Examiner asserts that the prior art reference Imai et al. (U.S. Patent No. 6,783,895) suggests a motivation to combine Chu et al. with Peled et al. As an initial point of clarification, it is noted that Imai et al. has a U.S. filing date that is after the foreign priority date of the instant application such that Imai et al. can be disqualified as prior art based on the instant application's foreign priority application. However, even assuming arguendo that Imai et al. is prior art, it is noted that Imai et al. further suggests that the use of large porosities creates problems since the resulting three dimensional network "does not have the strength required for the collector or is too rigid" and that when "the pressure applied to the paste is increased to improve the loading density of the paste, the nickel network skeleton of the collector may buckle or chip. Thus, the pressure on the active material paste must be reduced to avoid such buckling or chipping. However, desirable loading density of the paste is not achieved under a low pressure." (Col. 2, lines 1-17 of Imai et al.)

In view of this suggestion in Imai et al., Imai et al. teaches away from using large porosity such that Imai et al. would appear to teach away from modifying Chu et al. to have the porosity suggested in Peled et al., and otherwise does not suggest that such porosity is advantageous in current collectors not using the teflonated carbon to form the pores as suggested in Peled et al., or in current collectors using a conductive expanded matrix such as that suggested in Chu et al.

Lastly, while Chu et al. discloses the use of the conductive foam or conductive matrix as the current collector, there is no suggestion that the conductive foam or matrix includes a conductive agent. In the Advisory Action, the Examiner asserts that the metal in the conductive foam of Chu et al. qualifies as a conductive agent corresponding to the conductive agent in claim 6. However, it is respectfully submitted that Chu et al. does not suggest that the conductive agent is other than the coating metal. Since Peled et al. is not relied upon as

disclosing and does not disclose such a feature, it is respectfully submitted that the combination does not disclose or suggest the invention as recited in claim 6.

For at least similar reasons to those set forth in the Response, it is further respectfully submitted that Chu et al. does not disclose or suggest the invention recited in claims 17 and 18 in regards to the location of the conductive agent when added to the resin foam prior to the pyrolysis process.

2. Rejection of claims 25-28 in view of Barton et al. and Turi et al.

In the Office Action at pages 8-9, the Examiner rejects claims 25-28 under 35 U.S.C. §103 in view of Barton et al. (U.S. Patent No. 6,503,432) and Turi et al. (U.S. Patent No. 5,478,676). The rejection is traversed and reconsideration is respectfully requested.

In the Advisory Action, the Examiner clarifies that the applicants need to provide experimental evidence that the primer 18 suggested in Turi et al. used in the current collector of Barton et al. fills pores.

By way of review, Barton et al. suggests using a primer layer in the context of metal foil or sheet type current collectors, and the primer 18 suggested in Turi et al. is also used on a metal sheet or foil as disclosed in col. 3, lines 23-40. As such, it is respectfully submitted that, even assuming arguendo that the combination of Turi et al. and Barton et al. is proper, the combination suggests coating a solid type current collector with a primer layer including carbon black. Therefore, while not specifically addressed in the Advisory Action, it is respectfully submitted that, since the combination does not disclose coating a porous version of the current collector with the primer 18, the combination does not disclose the features of claims 25-28.

Claims 26-28 are deemed patentable due at least to their depending from claim 25.

3. Rejection of claims 25-28, 30, and 31 in view of Chu et al. and Turi et al.

In the Office Action at pages 9-11, the Examiner rejects claims 25-28, 30, and 31 under 35 U.S.C. §103 in view of Chu et al. and Turi et al. The rejection is traversed and reconsideration is respectfully requested.

On page 10 of the Office Action, the Examiner relies upon Turi et al. as disclosing a primer 18 including carbon black to be coated on a matrix as disclosed in Chu et al. However, it is respectfully submitted that, as similarly noted above in relation to the rejection of claim 25 in view of Barton et al. and Turi et al., Turi et al. suggests using the primer 18 in the context of a metal sheet or foil, and does not suggest that the primer 18 can or should be used in the context of a matrix such as that suggested in Chu et al. Therefore, it is respectfully submitted that the combination does not disclose the features of claim 25.

Claims 26-28, 30, and 31 are deemed patentable due at least to their depending from

claim 25.

4. Rejection of claims 29, 42, and 43 in view of Chu et al., Turi et al., and Peled et al.

In the Office Action at page 11, the Examiner rejects claims 29, 42, and 43 under 35 U.S.C. §103 in view of Chu et al., Turi et al., and Peled et al. The rejection is traversed and reconsideration is respectfully requested.

The Examiner relies upon Peled et al. as disclosing the ranges recited in claims 29, 42, and 43, but not as otherwise curing the above noted defect of the combination of Chu et al. and Turi et al. as applied to claim 25, from which claims 29, 42, and 43 depend. As such, it is respectfully submitted that claims 29, 42, and 43 are patentable over the combination due at least to the patentability of claim 25.

Lastly, as similarly set forth above in relation to the rejection of claims 1-24 in view of Chu et al. and Peled et al., it is respectfully submitted that there is insufficient evidence of a motivation to use the porosity range set forth in Peled et al. for the matrix described in the combination of Chu et al. and Turi et al. as is required to maintain a rejection of claims 29, 42, and 43 in view of the combination of Chu et al., Turi et al. and Peled et al., it is respectfully submitted that there is insufficient evidence of record as to why one of ordinary skill in the art would have been motivated to use the porosity ranges.

5. Rejection of claims 29, 42, and 43 in view of Barton et al., Turi et al., and Peled et al.

In the Office Action at page 12, the Examiner rejects claims 29, 42, and 43 under 35 U.S.C. §103 in view of Barton et al., Turi et al., and Peled et al. The rejection is traversed and reconsideration is respectfully requested.

The Examiner relies upon Peled et al. as disclosing the ranges recited in claims 29, 42, and 43, but not as otherwise curing the above noted defect of the combination of Barton et al. and Turi et al. as applied to claim 25, from which claims 29, 42, and 43 depend. As such, it is respectfully submitted that claims 29, 42, and 43 are patentable over the combination due at least to the patentability of claim 25.

Lastly, as similarly set forth above in relation to the rejection of claims 1-24 in view of Chu et al. and Peled et al. and the rejection of claims 29, 42, and 43 in view of Chu et al., Turi et al., and Peled et al., it is respectfully submitted that there is insufficient evidence of a motivation to use the porosity range set forth in Peled et al. for the matrix described in the combination of Barton et al. and Turi et al. as is required to maintain a rejection of claims 29, 42, and 43 in view of the combination of Barton et al., Turi et al. and Peled et al., it is respectfully submitted that there is insufficient evidence of record as to why one of ordinary skill in the art would have been motivated to use the porosity ranges.

CONCLUSION:

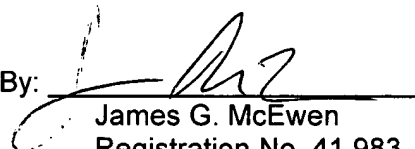
In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. And further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited and possibly concluded by the Examiner contacting the undersigned attorney for a telephone interview to discuss any such remaining issues.

If there are any additional fees associated with the filing of this Response, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

STEIN, MCEWEN & BUI LLP

By: 
James G. McEwen
Registration No. 41,983

1400 Eye Street, NW
Suite 300
Washington, D.C. 20005
Telephone: (202) 216-9505
Facsimile: (202) 216-9510

Date: FEB. 15, 2003